

ABSTRACT

A soft-touch gripping mechanism of the invention contains three gripping fingers arranged circumferentially around a circular flat object such as, e.g., a semiconductor wafer. The soft-tough force applied to the wafer from the gripping posts on the ends of the gripping fingers is controlled from a common force measurement sensor, e.g., a special position sensor that consists of a moveable magnetic flag attached to a pusher plate on the end of the output shaft of a linear stepper motor and a sensitive member, e.g. a Hall sensor chip that responds to the position of the magnetic flag. The Hall sensor produces an output voltage signal that is proportion to the position of the flag relative to the Hall sensor chip. The sensor is connected to a controller that also controls operation of the aforementioned linear stepper motor. The soft touch is achieved by transmitting the movement of the pusher to the linear fingers through a spring. In order to facilitate insertion of the distal finger into narrow slots between the flat objects, such as semiconductor wafers in the storage cassette, the distal post can be turned by an angle less 90° . Reduced rotary sliding movement minimizes a chance of contamination of the wafer with products of wear.